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Discussion

Author's reply[☆]

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In Ref. [1] it is concluded that what is important for the applicability of statistical energy analysis (SEA) is the presence of large number of modal pairs in the interacting subsystems and each subsystem need not have large number of modes. The above conclusion is based on the power flow relations in a two-subsystem model. As pointed out in Ref. [2] this is valid for a system having two subsystems. The system considered in Ref. [1] has only two subsystems (one is the diffuse acoustic field and the other is the plate). Hence the condition for the applicability of SEA as stated in Ref. [1] is valid for the system considered in Ref. [1].

Now consider a system having more than two subsystems. Indirect power flow paths will be present in such cases. Classical SEA does not consider indirect power flow. In a system having weakly coupled subsystems the indirect power flow is negligible and hence the classical SEA can be applied. In such cases also the conclusions of Ref. [1] are valid. As discussed in Ref. [2], presence of several modes in the subsystems assures negligible indirect power flow. From that point of view presence of large number of modes favours the application of classical SEA. But if the indirect power flow paths are included in the analysis, called quasi-SEA analysis, this condition need not be met. In such cases the difficulty will be in determining the indirect power flow.

References

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